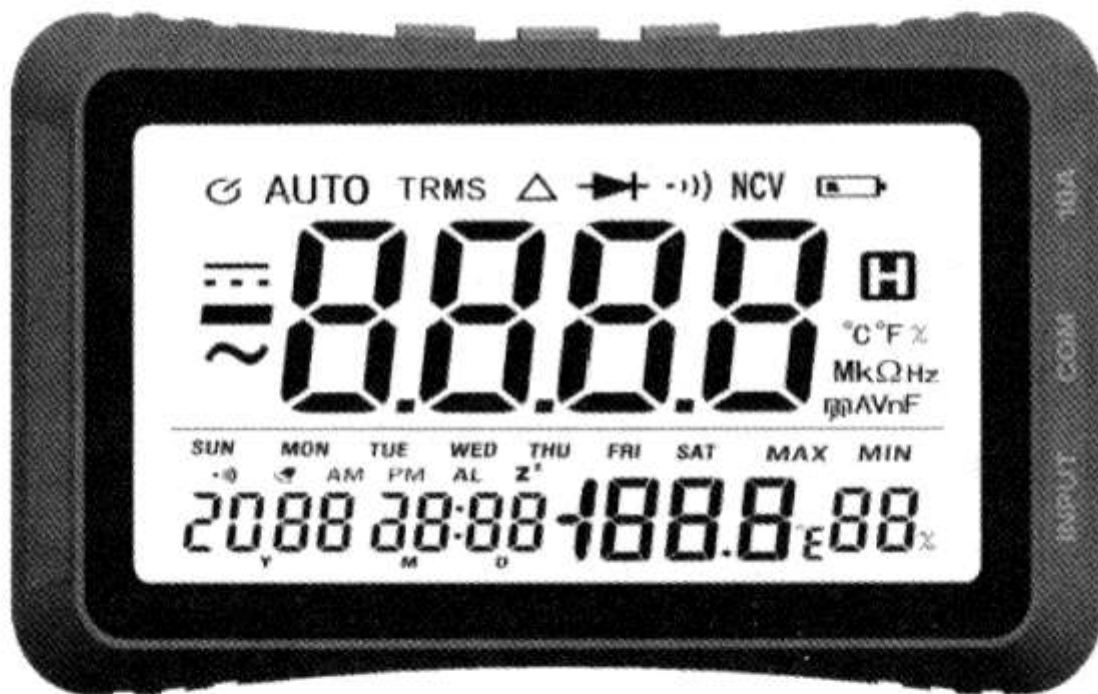


OPERATOR'S INSTRUCTION MANUAL

DIGITAL MULTIMETER



WARNING

READ AND UNDERSTAND THIS MANUAL
BEFORE USING THE INSTRUMENT.


1. Introduction

This manual provides all safety information, operation instruction, specifications and maintenance for the meter, which is compact, hand-held, and battery operated.

This instrument performs AC/DC voltage, AC/DC Current, Resistance, Audible Continuity, Diode, Frequency and Temperature measurements; it is a 3 3/4 digits, 4000 counts auto ranging DMM.


It has the functions of polarity indication, data hold, over range indication and automatic power-off. It can be operated easily and is an ideal instrument tool.

This digital multimeter has been designed according to EN61010-1 oncoming electronic measuring instruments with an over voltage category (CAT IV 600V) and Pollution degree 2.

 **Warning:** To avoid possible electric shock or personal injury, and to avoid possible damage to the Meter or to the equipment under test, adhere to the following rules:

- Before using the Meter inspect the case. Do not use the Meter if it is damaged or the case (or part of the case) is removed. Look for cracks or missing plastic. Pay attention to the insulation around the connectors.
- Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity.
- Do not apply more than the rated voltage, as marked on the Meter, between the terminals or between any terminal and grounding.
- The rotary switch should be placed in the right position and no any changeover of range shall be made during measurement is conducted to prevent damage of the Meter.
- When the Meter working at an effective voltage over




60V in DC or 30V rms in AC, special care should be taken for there is danger of electric shock.

- Use the proper terminals, function, and range for your measurements.
- Do not use or store the Meter in an environment of high temperature, humidity, explosive, inflammable and strong magnetic field. The performance of the Meter may deteriorate after dampened.
- When using the test leads, keep your fingers behind the finger guards.
- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity or diodes.
- Replace the battery as soon as the battery indicator  appears. With a low battery, the Meter might produce false readings that can lead to electric shock and personal injury.
- Remove the connection between the testing leads and the circuit being tested, and turn the Meter power off before opening the Meter case.
- When servicing the Meter, use only the same model number or identical electrical specifications replacement parts.
- The internal circuit of the Meter shall not be altered at will to avoid damage of the Meter and any accident.
- Soft cloth and mild detergent should be used to clean the surface of the Meter when servicing. No abrasive and solvent should be used to prevent the surface of the Meter from corrosion, damage and accident.
- The Meter is suitable for indoor use.
- Turn the Meter power off when it is not in use and take out the battery when not using for a long time. Constantly check the battery as it may leak when it




has been using for some time, replace the battery as soon as leaking appears. A leaking battery will damage the Meter.

2. Regular operations

2.1 Button

- 1)  button: Power button, long-press to on/off meter.
- 2) SELECT button: Function select button, only for multi-function on the range.
- 3)  /  button: Data-hold or back-light button; Short-press to hold or release data; Long-press to turn on/off back-light.
- 4) MODE button: Time/Alarm shift button; On Time or Alarm mode, press it on hold for more than 3 seconds into it's setting mode.
- 5) ADJ button: Time/Year shift button; Active or disable Alarm function on Alarm mode; Adjust value on setting mode.
- 6) °F/°C button: Fahrenheit temperature or Celsius temperature measurement mode shift.

2.2 Data hold function

Press  button to enter data hold mode, LCD shown  icon, LCD digits will stop refresh. And press this button or change function, it will exit data hold mode,  icon disappear from LCD.

Note: This function only for meter's measure function, Time and Ambient temperature will not affect.

2.3 Auto power off

If you don't operate the meter for about 15 minutes, it will turn off automatically. To turn on it again, just rotate the function rotary or press any button.

Note: This function only for meter's measure function, Time and Calendar will not affect.

2.4 Time and Calendar setting

On Time mode, long-press MODE button for more than 3 seconds, when digits being blink, it means that is setting mode. Then short-press MODE button to select 12/24 type clock - hour - minute - year - month - day to adjust(Blink digit). After adjust day, press MODE button, will exit setting mode.

2.5 Alarm setting

On Alarm mode, long-press MODE button for more than 3 seconds, when digits being blink, it means that is setting mode. Then short-press MODE button to select hour - minute to adjust(Blink digit). After adjust, press MODE button, will exit setting mode.

3. Operation instruction

Attention: The AUTO mode is an intelligent mode that can automatically recognize AC/DC voltage, AC/DC current, and resistance, but is also limited by low voltage, current, and high resistance threshold values. If you mind, please select the exclusive measurement function for measurement.

3.1 Measuring voltage

- 1) Connect the BLACK test lead to the "COM" jack and the RED to the "INPUT" jack.
- 2) On AUTO mode(can identify more than 1v electrical signal), or press SELECT button to select $V\sim$ or $V\overline{\sim}$ function.
- 3) Connect the test leads across the source or load to be measured.

- 4) Read LCD display. The polarity of the RED lead connection will be indicated when making a DC measurement.

3.2 Measuring current

- 1) Connect the BLACK test lead to the "COM" jack, connect the red test lead to the "10A" jack instead.
- 2) On AUTO mode, or select DC/AC current measure function by press SELECT button.
- 3) Connect test leads in series with the circuit to be measured.
- 4) Read the reading on the display. For DC current measurement, the polarity of the red test lead connection will be indicated as well.

3.3 Measure resistance and Continuity test

- 1) Connect the BLACK test lead to the "COM" jack and the RED to the "INPUT" jack (Note: The polarity of the red test lead is positive "+").
- 2) On AUTO mode, or press SELECT button to select resistance(Ω) or continuity(\bullet) function.
- 3) Connect the test leads across the load to be measured.
- 4) Read the reading on the display.
- 5) If the circuit resistance is lower than about 50 Ω , the built-in buzzer will sound.

3.4 Diode test

- 1) Connect the BLACK test lead to the "COM" jack and the RED to the "INPUT" jack (Note: The polarity of the red test lead is positive "+").
- 2) Press the "SELECT" button to select diode test mode, and the symbol " $\rightarrow|$ " will appear as an

indicator.

- 3) Connect the red test lead to the anode of the diode to be tested and the black test lead to the cathode.
- 4) The meter will show the approximate forward voltage of the diode. If the connections are reversed, "OL" will be shown on the display.


3.5 Capacitance measuring

- 1) Connect the BLACK test lead to the "COM" jack and the RED to the "INPUT" jack.
- 2) Select capacitance function by press SELECT button. (NOTE: The polarity of the RED lead is positive "+")
- 3) Connect test leads across the capacitor under measure and be sure the polarity of connection is observed.

3.6 Frequency measuring

- 1) Connect the BLACK test lead to the "COM" jack and the RED to the "INPUT" jack (Note: The polarity of the red test lead is positive "+").
- 2) Select frequency function by press SELECT button.
- 3) Connect the test leads across the load to be measured.

4. General characteristics

Display	: 4000 counts updates 3 times /sec
Polarity Indication	: "-" displayed automatically
Over-range Indication	: "OL" displayed
Low Battery Indication	:  displayed
Range select	: auto or manual
Operation temperature	: 0°C to 40°C, ≤ 80%RH
Storage temperature	: -10°C to 50°C, <85%RH
Battery type	: size AAA 1.5Vx2 battery

5. Specifications

Accuracy is guaranteed for 1 year $23\pm5^{\circ}\text{C}$, $\leq 80\%\text{RH}$

5.1 DC voltage(Auto ranging)

Range	Resolution	Accuracy
4V	1mV	$\pm(1.0\% \text{ of rdg} + 5\text{dgts})$
40V	10mV	
400V	100mV	
600V	1V	$\pm(1.2\% \text{ of rdg} + 5\text{dgts})$

Input impedance: $10\text{M}\Omega$

Max. input voltage: 600V DC/600V AC rms

5.2 AC voltage(Auto ranging)

Range	Resolution	Accuracy
4V	1mV	$\pm(1.3\% \text{ of rdg} + 8\text{dgts})$
40V	10mV	
400V	100mV	
600V	1V	$\pm(1.5\% \text{ of rdg} + 8\text{dgts})$

Input impedance: $10\text{M}\Omega$

Frequency range: 40Hz ~ 400Hz, True-RMS

Max. input voltage: 600V DC/AC rms

5.3 DC current

Range	Resolution	Accuracy
400mA	100 μA	$\pm(1.5\% \text{ of rdg} + 5\text{dgts})$
4A	1mA	$\pm(1.8\% \text{ of rdg} + 8\text{dgts})$
10A	10mA	

Overload protection: F10A/250V fuse

Max. input current: 10A

(For measurements > 1A: duration < 7 seconds, interval > 1 minutes)

5.4 AC current

Range	Resolution	Accuracy
400mA	100 μ A	$\pm(1.8\%$ of rdg + 5dgts)
4A	1mA	$\pm(2.2\%$ of rdg + 10dgts)
10A	10mA	

Overload protection: F10A/250V fuse

Max. input current: 10A

(For measurements > 1A: duration < 7 seconds, interval > 1 minutes)

Frequency range: 40Hz ~ 400Hz

Response: True-RMS

5.5 Resistance (Auto ranging)

Range	Resolution	Accuracy
400 Ω	0.1 Ω	$\pm(1.5\%$ of rdg + 10dgts)
4K Ω	1 Ω	$\pm(1.0\%$ of rdg + 5dgts)
40K Ω	10 Ω	
400K Ω	100 Ω	
4M Ω	1K Ω	
40M Ω	10K Ω	$\pm(1.5\%$ of rdg + 10dgts)



5.6 Capacitance

Range	Resolution	Accuracy
40nF	10pF	$\pm(4\%$ of rdg + 10dgts)
400nF	100pF	
4 μ F	1nF	
40 μ F	10nF	
400 μ F	100nF	
4mF	1 μ F	$\pm(5\%$ of rdg + 10dgts)
40mF	1 μ F	$\pm(6\%$ of rdg + 20dgts)


5.7 Frequency(Auto ranging)

Range	Accuracy
400/4K/40K/400K/4MHz	$\pm(1.5\% + 10)$

5.8 Diode and continuity

Range	Introduction	Remark
	The approximate forward voltage drop will be displayed	Open circuit voltage: about 1.5V
	The built-in buzzer will sound if the resistance is less than about 50Ω.	Open circuit voltage: about 2.0V

6. Battery replacement

If the sign "" appear on the display, it indicates battery should be replaced. Remove screws and open the back case, replace the exhausted battery with new batteries (Size AAA 1.5V x 2 or equivalent).

7. Fuse replacement

Fuse rarely needs replacement and is blown almost always as a result of operator's error. To replace the fuses, open the battery cover, replace the damaged fuse with a new fuse of the specified ratings. Re-install the battery cover and lock this cover.

8. Accessories

Owners manual:	1 piece
Test leads:	1 pair